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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/254,344	09/03/1999	YOSHIHIDE HAYASHIZAKI	024705-077	6838

7590

07/30/2002

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EXAMINER

HUTSON, RICHARD G

ART UNIT	PAPER NUMBER
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1652

DATE MAILED: 07/30/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/254,344

Applicant(s)

HAYASHIZAKI ET AL.

Examiner

Richard G Hutson

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-5 and 7-28 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11,13,14,18,20 and 22 is/are allowed.
- 6) ☐ Claim(s) 1,3,7-10,12,15,17,19,21,23 and 25<sup>+28</sup> is/are rejected.
- 7) ☒ Claim(s) 4,5 and 26-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

Applicants cancellation of claims 2 and 6, and amendment of claims 1, 3, 4, 7-24 and addition of new claims 26-28 in Paper No: 16, 5/20/2002, is acknowledged. Claims 1, 3-5, 7-28 are at issue and are present for examination.

Applicants' arguments filed on 5/20/2002, Paper No. 16, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Claim 24 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in Paper Nos. 11 and 12.

### ***Drawings***

The Drawings are objected to for the reasons on the new attached form PTO-948 with respect to applicants amendment of Figures 16 and 17. It is suggested that applicants label each of figures 16 and 18 as i.e.: Figure 16 A (for the first page) and Figure 16 B( for the second page), etc.. . and amend the description to accurately reflect this.

### ***Specification***

The disclosure is objected to because of the following informalities:  
This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2).

Art Unit: 1652

However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the following reason(s): the sequences shown in Figures 16 and 18 do not have an associated SEQ ID NO: .

It is noted that applicants have amended Figures 16 and a8, to overcome the objection listed on the PTO-948, but applicants have not also amended the description of these figures in a similar fashion (i.e. Figure 16-1A, 16-1B).

Appropriate correction is required.

### ***Claim Objections***

Claims 4, 5 and 26-28 are objected to because of the following informalities:

Claims 4, 5 and 26-28 depend from rejected claims. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 10, 12, 15, 17, 19, 21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 1-8, 10 and 25 as being indefinite in that it is unclear what the metes and bounds are of those molecules considered to be encompassed by "3'-deoxyribonucleotides and derivatives thereof", specifically with respect to "derivatives thereof" is withdrawn in light of applicants response.

Claim 7 was previously rejected because it is drawn to the RNA polymerase of claim 1 which has been modified so that the ability for incorporating 3'-deoxyribonucleotides and derivatives thereof should be increased by twice in comparison with the wild type. This claim is indefinite in that it is confusing that the claimed RNA polymerase has been modified so that the ability for incorporating 3'-deoxyribonucleotides and derivatives thereof is "increased by twice" in comparison with the wild type. Since the data presented in Example 8 and Table I of the specification does not describe any mutant in which the ability for incorporating 3'-deoxyribonucleotides and derivatives thereof is "increased by twice" in comparison with the wild type, and the specification describes the RNA polymerase of the present invention as having the ability of incorporating 3'-deoxynucleotides and derivatives thereof **at least twice** higher than the wild type, in the interest of prosecution, the office has interpreted this claim as being drawn to the RNA polymerase of claim 1 which has been modified so that the ability for incorporating 3'-deoxyribonucleotides and derivatives thereof is increased by **at least twice** in comparison with the wild type. It is further noted that the office has interpreted the "increased ability for incorporating 3'-deoxyribonucleotides and derivatives thereof" as an increase in the amount of dNTPs relative to rNTPs incorporated into a reference polynucleotide in the presence of both dNTPs and rNTPs.

It is noted that applicants have not addressed the above rejection of claim 7.

Claims 12, 15, 17, 19, 21 and 23 were previously rejected as being indefinite in that they are unclear in the recitation "The RNA polymerase of the previous claim (i.e.

Art Unit: 1652

11, 14, 16, 18, 20 and 22)" with additional limitations outside the scope of the polymerases encompassed by the previous claim. Claim 11 for example recites "An RNA polymerase which is an RNA polymerase derived from T7 phage and has tyrosine at amino acid residue 644 or 667." Claim 12 is outside the scope of claim 11 as it encompasses "An RNA polymerase which is an RNA polymerase having the sequence of the RNA polymerase of Claim 11 and an additional mutation also, and thus claim 12 does not properly depend from claim 11, in that it does not further limit the scope of polypeptides encompassed within claim 11, but is in fact claiming an RNA polymerase not included in the genus of claim 11.

Applicants traverse this rejection on the basis that they state the examiner has misinterpreted the claims, and that for instance claim 12 which depends from claim 11 further limits claim 11 by stipulating "that the mutant RNA polymerase of Claim 11 has an additional substitution, insertion, or deletion of an amino acid other than the amino acid..." This is not persuasive because such RNA polymerases are not included in claim 11. Claim 11 includes a genus with only 3 species, T7 RNA polymerase with Y644 mutated, T7 RNA Polymerase with Y667 mutated, and T7 RNA Polymerase with both T644 and Y667 mutated. Claim 12 does **not** stipulate "that **the mutant RNA polymerase of Claim 11** has an additional substitution, insertion, or deletion of an amino acid other than the amino acid...", but rather claim 12 stipulates "that **the RNA polymerase from T7 phage** has an additional substitution, insertion, or deletion of an amino acid other than the amino acid..." As was previously suggested, an amendment of claim 12 such as "A RNA polymerase comprising a RNA polymerase of claim 11 with

Art Unit: 1652

a further mutation..." would overcome this rejection. Each of claims 15, 17, 19, 21 and 23 are similarly outside the scope of the claim from which they depend and should be amended in a manner similar to that discussed for claim 12 above.

Claims 10 and 28 are indefinite in that it is unclear in that they are drawn to the RNA polymerase of claims 1 and 9, respectively, wherein the modified wild type RNA polymerase has a further substitution, insertion or deletion of an amino acid other than the modification and wherein the ...". Newly amended claim 1 and 9 are drawn to a RNA polymerase **consisting** of a mutation in a specific region of the RNA polymerase. Literal interpretation of claims 10 and 28 is such that claims 10 and 28 are drawn to additional mutations, beyond that of claims 1 and 9, wherein the additional mutations are also within this same region (i.e. that region specified in claims 1 or 9). Since claims 1 and 9 are drawn to those mutations **consisting** ..., the additional mutations of claim 10 and 28 must be located within this region. While this is how the claim is interpreted, it is not clear if this is the intent of applicants. Perhaps it is applicants intent to claim a RNA polymerase with the sequence of the polymerase of claim 1 or 9, and comprises an additional mutation, wherein the specific region of this mutation is not limited.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1652

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7-9 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Sousa et al. (EMBO Journal Vol 14, No. 18, pp 4609-4621, 1995).

The rejection is stated in the previous office action. Applicants traverse the rejection on the basis that the cited publication must contain all of the elements of the claimed invention and that Sousa et al. does not meet this burden. Applicants submit that Sousa et al. never disclose the use of 3'-deoxyribonucleotides by RNA polymerase, much less the enhanced ability of a mutated RNA polymerase to incorporate them. Applicants submit that Sousa et al. only disclose the use of dNTPs (i.e. 2'-dNTPs) and rNTPs. This argument is not found persuasive, as applicants are reminded that the rejected claims are not drawn to the use of 3'-deoxyribonucleotides by a mutant RNA polymerase, but to the mutant RNA polymerase itself, and the ability of the mutant RNA polymerase to incorporate 3'-deoxyribonucleotides to a greater extent than the wildtype RNA polymerase is an inherent property of the mutant RNA polymerase taught by Sousa et al. Sousa et al. teach a number of mutant RNA polymerases which meet the structural limitations of the rejected claims and Sousa et al. further teach that many of these mutant RNA polymerases show an increased ability to incorporate dNTPs relative to rNTPs.

Sousa et al. do not specifically teach that the disclosed mutants have an increased ability to incorporate 3'-deoxyribonucleotides, this is believed to be an inherent property of the taught mutant RNA polymerases based on their altered substrate specificity (i.e. dNTPs versus rNTPs).



Thus claims 1, 3, 7-9 and 25 remain anticipated by Sousa et al.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

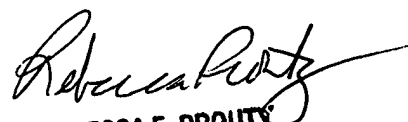
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard G Hutson whose telephone number is (703) 308-0066. The examiner can normally be reached on 7:30 am to 4:00 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on (703) 308-3804. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3014 for regular communications and (703) 305-3014 for After Final communications.

Art Unit: 1652

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Richard Hutson, Ph.D.  
Patent Examiner  
Art Unit 1652  
July 29, 2002

  
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